NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Vehicle Recorder Division
Washington, D.C. 20594

GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

CEN15FA034

By
Joe Gregor

WARNING

The reader of this report is cautioned that the transcript of a cockpit voice recorder audio recording is not a precise science but is the best product possible from a Safety Board group investigative effort. The transcript or parts thereof, if taken out of context, could be misleading. The transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

February 23, 2016

Cockpit Voice Recorder

Group Chairman's Factual Report
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1. EVENT SUMMARY

Location:	Wichita, Kansas
Date:	October 30, 2014
Aircraft:	Hawker Beechcraft 200, Registration N52SZ
Operator:	Private
NTSB Number:	CEN15FA034

On October 30, 2014, at 0948 central daylight time, a Raytheon Aircraft Company King Air B200, N52SZ, impacted the Flight Safety International (FSI) building located on the airport after takeoff from the Wichita Mid-Continent Airport (KICT), Wichita, Kansas. The pilot, who was the sole occupant, was fatally injured and the airplane was destroyed. Three building occupants were fatally injured, 2 occupants sustained serious injuries and four occupants sustained minor injuries. The airplane was registered to and operated by Gilleland Aviation, Inc., Georgetown, Texas, under the provisions of 14 *Code of Federal Regulations* Part 91 as a business flight. The cockpit voice recorder (CVR) Group convened on 13 May, 2015 and a transcript was prepared for the 30-minute, 34-second digital recording (see attached).

2. GROUP

Chairman:	Joseph A. Gregor Electrical Engineer National Transportation Safety Board (NTSB)
Chairman:	Joshua Lindberg Air Safety Investigator NTSB
Member:	John Clark Senior Technical Advisor NTSB
Member:	Matthew Rigsby Air Safety Investigator Federal Aviation Administration

Member:	Chris Harrold Chief Production Test Pilot - Beechcraft Textron Aviation
Member:	Man-Chun Tse, PhD Staff Aerodynamicist - Acoustics Pratt & Whitney Canada

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model:	**Fairchild A-100S**
Recorder Serial Number:	**02140**

3.1 CVR Carriage Requirements

Per federal regulation, multiengine aircraft with more than six passenger seats and requiring two pilots manufactured prior to April 7, 2010, and operated under 14 CFR 91, must be equipped with a CVR that records a minimum of the last 30 minutes of aircraft operation; this is accomplished by recording over the oldest audio data. The accident aircraft was manufactured in 1999. When the CVR is deactivated or removed from the airplane, it retains only the most recent 30 minutes of recorded information.

3.2 Recorder Description

This model CVR, the Fairchild A-100S, records a minimum of 30 minutes of digital audio stored on solid state memory modules. Four channels are recorded: one channel for each flight crew, one channel for a cockpit observer, and one channel for the cockpit area microphone (CAM).

3.3 Recorder Damage

Upon arrival at the laboratory, an external inspection indicated signs of heat/smoke exposure. An internal inspection was performed, and it was evident that the CVR had not sustained any functional heat or structural damage (see figure 1). The audio information was extracted from the recorder normally, without difficulty.

Figure 1. Fairchild A-100S CVR recovered from Hawker Beechcraft 200, N52SZ.

3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1.[1] Channel number three did not contain any audio information (nor was it required by federal regulations).

Table 1: Audio Quality.

Channel #	Content/Source	Quality	Duration
1	First Officer	Excellent	30 min
2	Captain	Excellent	30 min
3	Other	n/a	30 min
4	CAM	Poor	30 min

3.5 Timing and Correlation

In consultation with the investigator in Charge (IIC), timing with external sources was not performed; CVR events are expressed in elapsed time from the beginning of the recording.

3.6 Description of Audio Events

The recording and transcript began at 0000:00 (hhmm:ss, elapsed time from start of recording). The first 9 minutes, 55 seconds of the recording pertained to a taxi operation performed some time prior to the accident flight. The accident flight began at 0010:16 and continued to the end of the recording, at 0030:34. A transcript of the recording follows.

[1] See attached CVR Quality Rating Scale.

Attachment I

CVR Quality Rating Scale

The levels of recording quality are characterized by the following traits of the cockpit voice recorder information:

Excellent Quality — Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other.

Good Quality — Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other.

Fair Quality — The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information.

Poor Quality — Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information.

Unusable — Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system.

Transcript of a Fairchild A-100S solid-state cockpit voice recorder, serial number 02140, installed on an Private Hawker Beechcraft 200 (N52SZ), which crashed after takeoff at Wichita Mid-Continent Airport (KICT) in Wichita, Kansas.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmission from N52SZ
CLD	Radio transmission from clearance delivery
GND	Radio transmission from the KICT ground controller
TWR	Radio transmission from the KICT airport tower controller
ATIS	Radio transmission from the KICT aviation terminal information service (ATIS)
-1	Voice identified as the accident pilot
-2	Voice identified as the aircraft operator during a previous taxi operation
-?	Voice unidentified
*****	Unintelligible word
#	Expletive
@	Non-pertinent word
( )	Questionable insertion
[ ]	Editorial insertion

Note 1: Times are expressed in elapsed time from the beginning of the CVR recording.

Note 2: Generally, only radio transmissions to and from the accident aircraft were transcribed.

Note 3: Words shown with excess vowels, letters, or drawn out syllables are a phonetic representation of the words as spoken.

Note 4: A non-pertinent word, where noted, refers to a word not directly related to the operation, control or condition of the aircraft.

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
00:00:00.0	**Start of Recording**		
00:00:00.0	**Start of Transcript**		
00:02:16			
CAM	[increase in background sound, similar to engine run, duration approximately 4 minutes].		
		00:07:15	
		RDO-2	Wichita ground King Air five two sierra zulu.
		00:07:20	
		GND	King Air five two sierra zulu go ahead.
		00:07:22	
		RDO-2	yeah I'm all finished at the compass rose I'd like to go back ah Hawker Beech.
		00:07:25	
		GND	five two sierra zulu roger taxi via bravo alpha alpha five.
		00:07:28	
		RDO-2	via bravo alpha alpha five sierra zulu thanks.
		00:07:32	
		GND	you're welcome.
00:09:55			
CAM	[sound electronic noise, similar to electrical power transition].		
00:10:00			
HOT	[sound of electronic warning, similar to altitude alerter warning tone].		

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
00:10:16 **CAM**	[sound electronic noise, sound similar to electrical power transition].		
00:10:22 **HOT**	[sound of electronic warning, sound similar to altitude alerter warning tone].		
00:11:02 **HOT**	[sound of electronic warning, sound similar to altitude alerter warning tone].		
00:11:02 **CAM**	[sound of increased background noise, consistent with engine start].		
00:12:15 **HOT**	[sound of electronic warning, sound similar to altitude alerter warning tone].		
00:12:58 **HOT**	[sound of electronic warning, sound similar to electronic tone].		
00:14:44 **HOT**	[sound of electronic warning, sound similar to altitude alerter warning tone].		

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
00:17:53 **ATIS**	…taxiway alpha closed between taxiway's alpha five and alpha one. taxiway alpha two closed between november and the ramp. taxiway alpha four closed, crane midfield one thousand five hundred. advise on initial contact you have ATIS hotel. Wichita Midcontinent ATIS information hotel one three five three zulu. wind three one zero at eight. visibility one zero. one five thousand scattered. temperature one zero, dew point three. altimeter three zero one zero. visual approach in use landing and departing runway one right. notice to airmen, runway one left closed. runway one left ILS out of service…		
		00:20:04 **RDO-1**	clearance King Air five two sierra zulu information hotel I-F-R to M-E-Z.
		00:20:10 **CLD**	King Air five two sierra zulu Wichita clearance. cleared to mike echo zulu airport via as filed maintain five thousand expect flight level two seven zero at one zero minutes after departure, departure frequency is one three four point eight five and squawk two five zero six.
		00:20:28 **RDO-1**	alright five two sierra zulu as filed five twenty seven (at) ten thirty forty five twenty five zero six.

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		00:20:34 **CLD**	King Air two sierra zulu readback correct contact ground for taxi.
		00:20:38 **RDO-1**	yup.
00:21:03 **HOT**	[sound similar to electronic notification tones].		
00:21:14 **HOT-1**	# it.		
		00:22:09 **RDO-1**	ground King Air five two sierra zulu we're over at ah Raytheon like to ah taxi with hotel.
		00:22:18 **GND**	King Air five two sierra zulu Wichita runway one right at echo three taxi via alpha five alpha bravo echo.
		00:22:34 **RDO-1**	okay five two sierra zulu. alpha five alpha bravo echo echo three intersection departure five two sierra zulu.
		00:22:48 **GND**	King Air two sierra zulu did I miss verify information hotel?
		00:22:52 **RDO-1**	we got it guess your clearance guy didn't tell you.
		00:22:54 **GND**	thanks.

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		00:22:55 **RDO-1**	how's @.
		00:22:56 **GND**	hey how's it goin?
		00:22:57 **RDO-1**	good.
		00:23:50 **RDO-1**	ground five two sierra zulu I just need to a quick runup do you * any place you want me to go besides echo three?
		00:23:55 **GND**	five two sierra zulu ah, all the way to end would be alright ah King Air at echo three also has a, maybe, if he's gone by the time you get there you can go into echo three otherwise go to the end.
		00:24:06 **RDO-1**	okay.
00:25:56 **HOT-1**	alright.		
00:26:13 **HOT-1**	prop test. [whispered].		
00:26:17 **CAM**	[sounds consistent with engine run lasting approximately 35 to 45 seconds].		
		00:27:50 **RDO-1**	that you @?
00:27:53 **HOT**	*.		

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
00:28:03			
HOT-1	* trim. [whispered].		
00:28:11			
HOT-1	# it.		
00:28:50			
HOT-1	*.		
		00:28:58	
		RDO-1	tower King Air five two sierra zulu's ready one right.
		00:29:03	
		TWR	King Air five two sierra zulu Wichita tower runway one right fly runway heading cleared for takeoff.
		00:29:08	
		RDO-1	fly runway heading cleared takeoff five two ah sierra zulu.
00:29:38			
HOT-1	[sound if increased background noise, similar to engine power increasing].		
00:29:52			
HOT-1	(we have) eighty knots * (feathers) armed.		
00:29:59			
HOT	[possible mechanical sound followed by sounds consistent with propeller sounds].		
00:30:01			
CAM	[beating sounds between props changes character].		
00:30:05			
HOT-1	the #.		

TIME and SOURCE	INTRA-COCKPIT COMMUNICATION CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		00:30:13 **RDO-1**	and tower just declaring an emergency ah we just lost loss the left engine.
00:30:14 **HOT**	[sound similar to stall warning horn].		
00:30:16 **HOT**	[sound similar to stall warning horn].		
		00:30:17 **TWR**	and King Air two sierra zulu roger.
00:30:19 **HOT**	[sound similar to stall warning horn].		
00:30:20 **HOT**	[sound similar to stall warning horn].		
00:30:25 **HOT-1**	# we're going in we're dead.		
00:30:34	**End of Recording**		
00:30:34	**End of Transcript**		